



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/552,376

10/07/2005

Hua Chen

H0003955

9276

128 7590 11/06/2009  
HONEYWELL INTERNATIONAL INC.  
PATENT SERVICES  
101 COLUMBIA ROAD  
P O BOX 2245  
MORRISTOWN, NJ 07962-2245

EXAMINER

VERDIER, CHRISTOPHER M

ART UNIT

PAPER NUMBER

3745

MAIL DATE

DELIVERY MODE

11/06/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/552,376	<b>Applicant(s)</b> CHEN, HUA	
	<b>Examiner</b> Christopher Verdier	<b>Art Unit</b> 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-6,9 and 11-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,9 and 11-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 3745

Applicant's Amendment dated June 19, 2009 has been carefully considered but is non-persuasive. The specification has been amended to provide proper antecedent basis for the subject matter of claim 1, as set forth in the Office Action of March 5, 2009. The claims have been amended to correct the informalities therein. Claims 16 and 17 have been amended to overcome the rejections under 35 USC 112, second paragraph. Correction of these matters is noted with appreciation.

Applicant's Figure A depicting claimed features of the instant application is appreciated and has been carefully reviewed. In light of Figure A, Applicant has argued that Mitsubori 5,246,335 does not disclose a sharp edge connecting a downstream-facing blocking face to a smoothly curving surface upstream of the blocking face. The examiner respectfully disagrees, because Mitsubori (figure 2) discloses a sharp edge (unnumbered, but a sharp edge element of the discontinuity B in the annotated figure below) connecting a downstream-facing blocking face (formed by the discontinuity) to a smoothly curving surface C upstream of the blocking face. The sharp edge in Mitsubori still extends across the gas flow path, since it extends perpendicular to the axis of rotor 11.

In light of Figure A, Applicant has argued that Yoshinaga 4,395,197 does not disclose a sharp edge connecting a downstream-facing blocking face to a smoothly curving surface upstream of the blocking face. The examiner respectfully disagrees, because Yoshinaga discloses a sharp edge (unnumbered, but a sharp edge element of the discontinuity B in the annotated figure below) connecting a downstream-facing blocking face (formed by the

Art Unit: 3745

discontinuity) to a smoothly curving surface C upstream of the blocking face. The sharp edge in Yoshinaga extends across the gas flow path.

In light of Figure A, Applicant has argued that Fabri 3,824,029 does not disclose a sharp edge connecting a downstream-facing blocking face to a smoothly curving surface upstream of the blocking face. The examiner respectfully disagrees, because Fabri discloses a sharp edge (unnumbered, but a sharp edge element of the discontinuity B in the annotated figure below) connecting a downstream-facing blocking face (formed by the discontinuity) to a smoothly curving surface C upstream of the blocking face. The sharp edge in Fabri still extends across the gas flow path, since it extends perpendicular to the axis of rotor 3.

Applicant has argued in both Yoshinaga 4,395,197 and Fabri 3,824,029, the identified faces are on the housing wall outside the shroud of a shrouded turbine wheel, and that interpreting the housing wall as the shroud discounts or ignores the meaning of the word shroud, which is a clear and precise term of art to a person skilled in the art of designing turbocharger turbines, and attempts to call two wholly separate regions of space a single gas flow path, even though one of them does not meet the recited limitations. Applicant has further argued that when the shroud is incorporated in the turbine wheel, the surrounding housing is not a shroud. These arguments are not persuasive. The term “shroud” is well-known to persons of ordinary skill in the art, and one of ordinary skill in the art would recognize element 27/28 of Yoshinaga as a shroud, and element 1 of Fabri as a shroud. The fact that these references also disclose impellers

Art Unit: 3745

which also have a shroud does not disqualify element 27/28 of Yoshinaga as being a shroud, and element 1 of Fabri as being a shroud.

Applicant's arguments that in both Yoshinaga 4,395,197 and Fabri 3,824,029, the discontinuity is not in the flow path, and that the Office Action appears to allege that the gas flow path includes both the path passing within the shroud and an entirely separate path extending through small gaps at either end of the shroud and passing outside the shroud between the shroud and the housing wall, and that the second pathway is not within the shroud, and no blades rotate through that pathway, are not persuasive. The above-identified discontinuities B in both Yoshinaga and Fabri are clearly located along the gas flow path gas flow path through which the compressor blades are rotating to pressurize the air, as one skilled in the art would readily recognize from the figures thereof.

Applicant's arguments that both Yoshinaga 4,395,197 and Fabri 3,824,029 do not disclose downstream-facing blocking faces, in relation to Figures C and D which Applicant has provided on page 17 of Applicant's Remarks dated June 19, 2009, since the added lines show the direction that walls in the vicinity of the trailing edges are facing, that in each case the walls are facing directly across the flow, and that there is no portion of the passageway that is angled to suggest that the wall is in a downstream-facing direction, are not persuasive. The discontinuities B in each of these references are located towards the outlet side of the compressor, and are broadly considered as being in a downstream-facing direction. Note that during patent examination, the pending claims must be interpreted as broadly as their terms reasonably allow.

Art Unit: 3745

*In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). Further, it is improper to import claim limitations from the specification. MPEP 2111.01.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

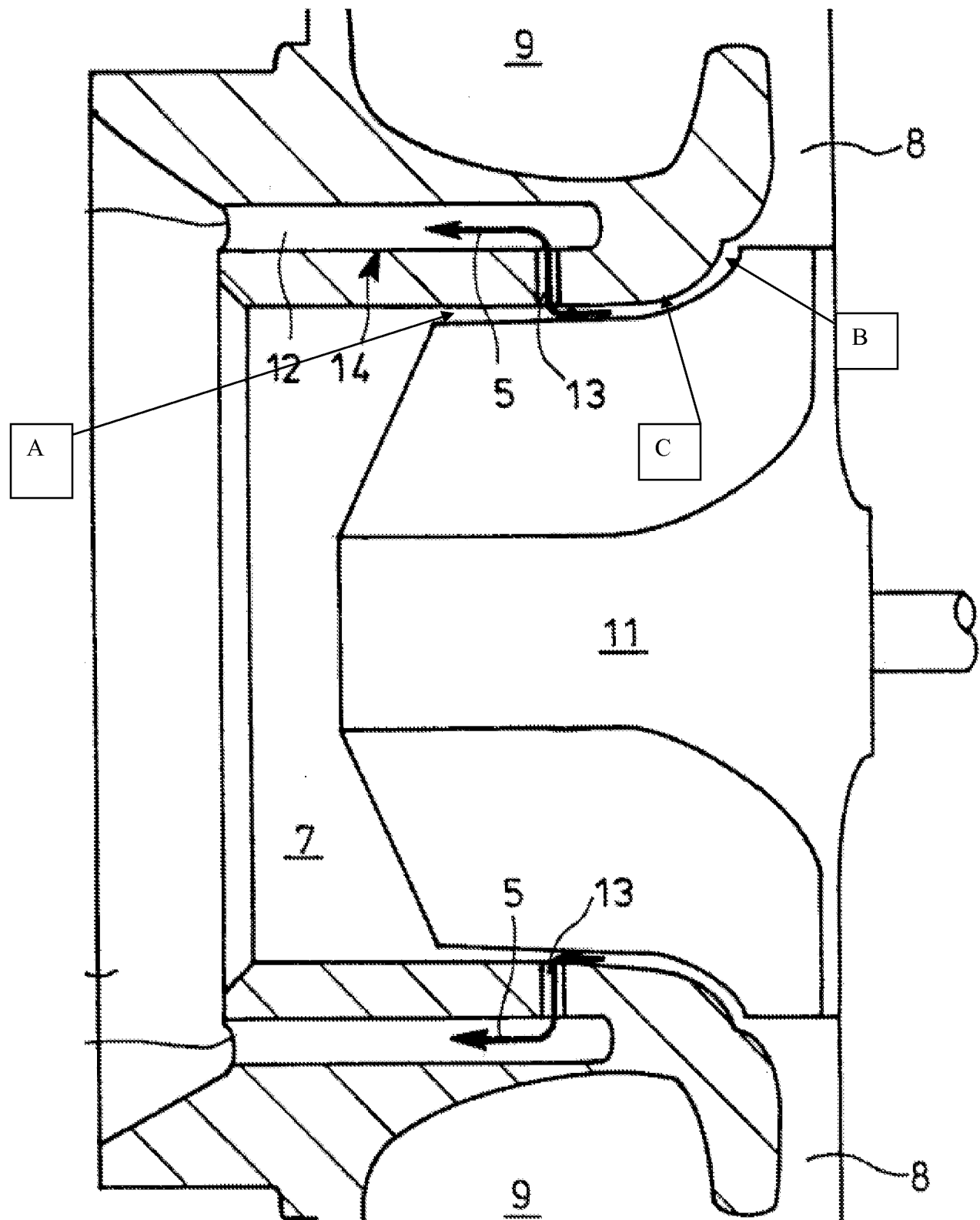
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 15/1, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Mitsubori 5,246,335 (figure 2). Disclosed is a compressor comprising a compressor wheel having a hub 11, unnumbered free-ended compressor blades and being mounted for rotation on an unnumbered shaft, each blade being characterized by a free-ended outer edge, an upstream leading edge and a downstream trailing edge, and a shroud 4 mounted adjacent and around the outer edges of the compressor blades and defining a gas flow path between the shroud and the hub from a compressor inlet 6 to a diffuser outlet 8, through which the blades rotate with respect to the shroud, wherein in cross-section the shroud forms a surface A along the flow path, the surface being characterized by a profile that includes a relative discontinuity B in the region of the trailing edge, wherein the discontinuity forms a downstream-facing blocking face adapted to impede an upstream flow of gas between the shroud and the wheel, the blocking face extending across the flow path to form a sharp edge connecting the blocking face to a smoothly curving surface C along the gas flow path upstream of the blocking face. The compressor is included

Art Unit: 3745

with a turbocharger. The discontinuity is in the form of a groove. Note the annotated figure below.





***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

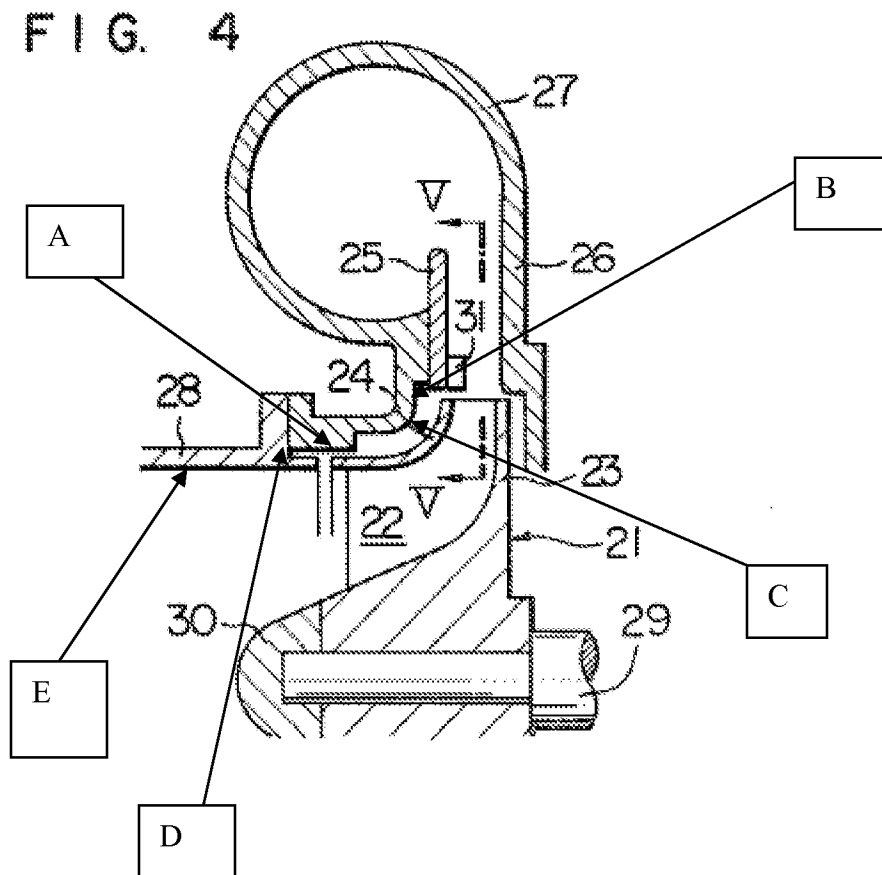
Claims 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga 4,395,197 in view of Jones 3,893,787. Yoshinaga disclosed a compressor substantially as claimed, comprising a compressor wheel 21 having a hub 1, compressor blades 22 and being mounted for rotation on a shaft 29, each blade being characterized by an outer edge, an upstream leading edge and a downstream trailing edge, and a shroud 27/28 mounted adjacent (note that adjacent does not require that two elements be immediately next to one another) and around the outer edges of the compressor blades and defining a gas flow path between the shroud and the hub from a compressor inlet to a diffuser outlet, through which the blades rotate with respect to the shroud, wherein in cross-section the shroud forms a surface A along the flow path, the surface being characterized by a profile that includes a relative discontinuity B in the region of the trailing edge, wherein the discontinuity forms a downstream-facing blocking face adapted to impede an upstream flow of gas between the shroud and the wheel, the blocking face extending across the flow path to form a sharp edge connecting the blocking face to a smoothly curving

Art Unit: 3745

surface C along the gas flow path upstream of the blocking face. The cross-section profile of the shroud surface along the flow path is further characterized by a second relative discontinuity D that is in the region of the leading edge, wherein the second relative discontinuity forms a second-discontinuity downstream-facing blocking face adapted to impede an upstream flow of gas between the shroud and the wheel, the second-discontinuity blocking face extending across the flow path to form a second-discontinuity sharp edge connecting the second blocking face to a second-discontinuity smooth surface E upstream of the second-discontinuity blocking face. The second discontinuity is located upstream of the leading edge of the wheel blades. The second discontinuity is spaced from the leading edge of the wheel blades by a distance of the same order as the axial clearance of the trailing edge from the compressor housing. The or each downstream-facing blocking face comprises a planar surface cut into the curving surface. The second-discontinuity downstream-facing blocking face comprises a planar surface cut into the curving surface, and the planar surface is perpendicular to the axis of the shaft. The radial extent of the second discontinuity is of the same order as the radial clearance between the trailing edge and the housing. The sizes of the first and second discontinuities are closely similar. The discontinuity is in the form of a groove. The shapes of the first and second discontinuities are closely similar. Concerning claim 15, the term “turbocharger” is recited in the preamble of the claim and has not been given patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*,

535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Note the annotated figure below.

However, Yoshinaga does not disclose that the compressor blades are free-ended, with each blade having a free-ended outer edge (claim 1). Rather, the compressor blades have a shroud 24.



Art Unit: 3745

Jones shows a compressor 1 having a compressor wheel having a hub 4 with free-ended compressor blades 6 mounted for rotation on a shaft 12, each blade being characterized by a free-ended outer edge, an upstream leading edge and a downstream trailing edge. The inside of a stationary shroud 8 may be provided with grooves 20. The flowpath along the shroud is non-uniform. Therefore, Jones teaches the combination of a compressor having a shroud having a non-uniform flowpath and compressor blades that are free-ended, with each blade having a free-ended outer edge, for the purpose of reducing rotating mass of the compressor wheel.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to remove the shroud from the compressor wheel of Yoshinaga such that the compressor blades are free-ended, with each blade having a free-ended outer edge, as taught by Jones, for the purpose of reducing rotating mass of the compressor wheel.

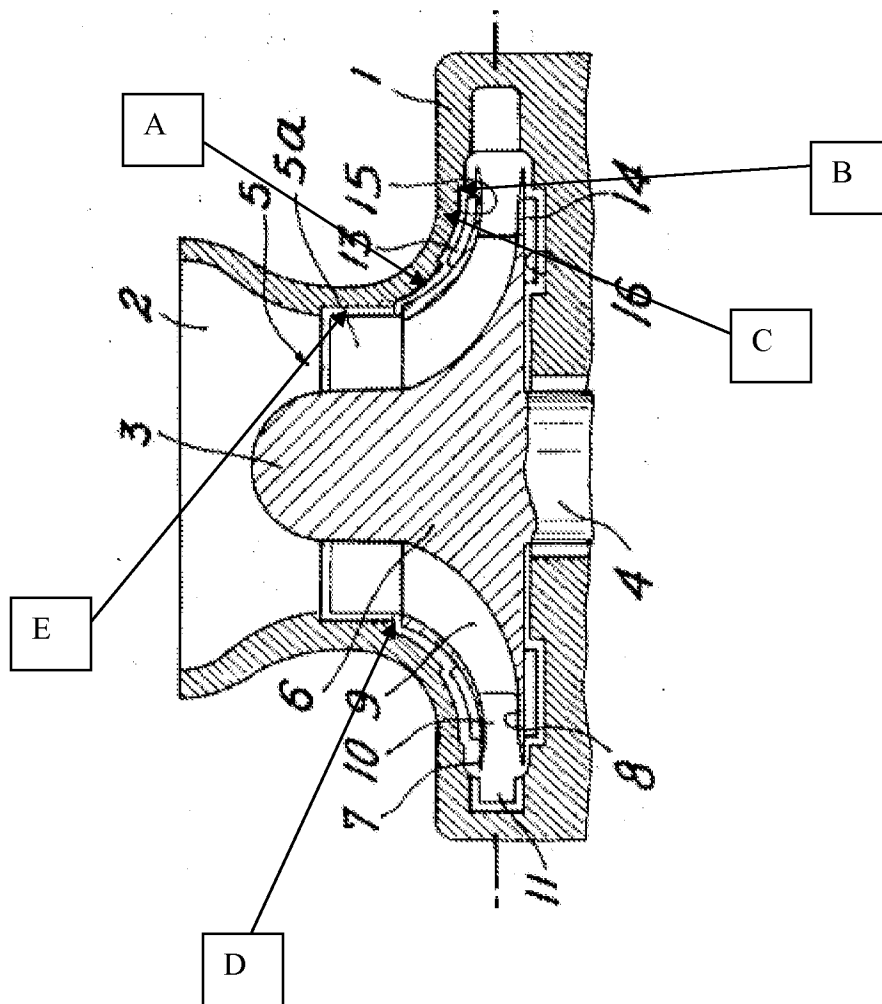
Claims 1, 4, 5, 9, 11, 13/9, 14/9, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 in view of Jones 3,893,787. Fabri discloses a compressor substantially as claimed, comprising a compressor wheel 3/6 having a hub 3 and compressor blades 9 and being mounted for rotation on a shaft 4, each blade being characterized by an outer edge, an upstream leading edge and a downstream trailing edge, and a shroud 1 mounted adjacent (note that adjacent does not require that two elements be immediately next to one another) and around the outer edges of the compressor blades and defining a gas flow path between the shroud and the hub from a compressor inlet to a diffuser outlet, through which the blades rotate with respect to the shroud, wherein in cross-section the shroud forms a surface

Art Unit: 3745

A along the flow path, the surface being characterized by a profile that includes a relative discontinuity B in the region of the trailing edge, wherein the discontinuity forms a downstream-facing blocking face adapted to impede an upstream flow of gas between the shroud and the wheel, the blocking face extending across the flow path to form a sharp edge connecting the blocking face to a smoothly curving surface C along the gas flow path upstream of the blocking face. The cross-section profile of the shroud surface along the flow path is further characterized by a second relative discontinuity D that is in the region of the leading edge, wherein the second relative discontinuity forms a second-discontinuity downstream-facing blocking face adapted to impede an upstream flow of gas between the shroud and the wheel, the second-discontinuity blocking face extending across the flow path to form a second-discontinuity sharp edge connecting the second blocking face to a second-discontinuity smooth surface E upstream of the second-discontinuity blocking face. The second discontinuity is located upstream of the leading edge of the wheel blades. The or each downstream-facing blocking face comprises a planar surface cut into the curving surface. The second-discontinuity downstream-facing blocking face comprises a planar surface cut into the curving surface, and the planar surface is perpendicular to the axis of the shaft. The sizes of the first and second discontinuities are closely similar. The shapes of the first and second discontinuities are closely similar. Concerning claim 15, the term “turbocharger” is recited in the preamble of the claim and has not been given patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able

Art Unit: 3745

to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Note the annotated figure below.



However, Fabri does not disclose that the compressor blades are free-ended, with each blade having a free-ended outer edge (claim 1). Rather, the compressor blades have a shroud 7.

Jones shows a compressor 1 having a compressor wheel having a hub 4 with free-ended compressor blades 6 mounted for rotation on a shaft 12, each blade being characterized by a free-

Art Unit: 3745

ended outer edge, an upstream leading edge and a downstream trailing edge. The inside of a stationary shroud 8 may be provided with grooves 20. The flowpath along the shroud is non-uniform. Therefore, Jones teaches the combination of a compressor having a shroud having a non-uniform flowpath and compressor blades that are free-ended, with each blade having a free-ended outer edge, for the purpose of reducing rotating mass of the compressor wheel.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to remove the shroud from the compressor wheel of Fabri such that the compressor blades are free-ended, with each blade having a free-ended outer edge, as taught by Jones, for the purpose of reducing rotating mass of the compressor wheel.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 and Jones 3,893,787 as applied to claims 1 and 4, respectively above, and further in view of Trumpler 2,471,174. The modified compressor of Fabri shows a compressor substantially as claimed as set forth above, including the blocking face at B forming a second sharp edge on an opposite side of the blocking face from the first sharp edge, and including the first-discontinuity blocking face forming a second sharp edge on an opposite side of the first-discontinuity blocking face from the first sharp edge of the first-discontinuity blocking face, but does not show that the second sharp edge connects the blocking face to a second smoothly curving surface that is downstream of the blocking face.

Trumpler shows a centrifugal compressor having a blocking face (unnumbered, attached to C and opposite 34a) forming a second sharp edge on an opposite side of the blocking face

Art Unit: 3745

from a first sharp edge, the second sharp edge connecting the blocking face to a smoothly curving surface 5a downstream of its respective discontinuity, for the purpose of providing recirculation to prevent surge.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified compressor of Fabri such that the second sharp edge connects the blocking face to a second smoothly curving surface downstream of its blocking face, as taught by Trumpler, for the purpose of providing recirculation to prevent surge.

Claims 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinaga 4,395,197. Yoshinaga discloses a compressor substantially as claimed as previously set forth above, but does not disclose that the compressor blades are free-ended, with each blade having a free-ended outer edge (claim 1). Rather, the compressor blades have a shroud 24.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to remove the shroud from the compressor wheel of Yoshinaga such that the compressor blades are free-ended, with each blade having a free-ended outer edge, for the purposes of reducing the rotating mass and cost of the compressor wheel, providing flexibility to the compressor wheel by virtue of the free-ended blades, and changing the flowpath through the compressor shroud. Note that omission of an element and its function is obvious if the function of the element is not desired. *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989); *In re*



Art Unit: 3745

*Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965); *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975). Since the mass, cost, flexibility and flowpath through the compressor shroud are changed, the above case law applies.

Claims 1, 4, 5, 9, 11, 13/9, 14/9, 13/4, 14/4, 15/1, 15/4, 15/11, and 18 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029. Fabri discloses a compressor substantially as claimed as previously set forth above, but does not disclose that the compressor blades are free-ended, with each blade having a free-ended outer edge (claim 1). Rather, the compressor blades have a shroud 7.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to remove the shroud from the compressor wheel of Fabri such that the compressor blades are free-ended, with each blade having a free-ended outer edge, for the purposes of reducing the rotating mass and cost of the compressor wheel, providing flexibility to the compressor wheel by virtue of the free-ended blades, and changing the flowpath through the compressor shroud. Note that omission of an element and its function is obvious if the function of the element is not desired. *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989); *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965); *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975). Since the mass, cost, flexibility and flowpath through the compressor shroud are changed, the above case law applies.

Art Unit: 3745

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fabri 3,824,029 as applied to claims 1 and 4, respectively above, and further in view of Trumpler 2,471,174. The modified compressor of Fabri shows a compressor substantially as claimed as set forth above, including the blocking face at B forming a second sharp edge on an opposite side of the blocking face from the first sharp edge, and including the first-discontinuity blocking face forming a second sharp edge on an opposite side of the first-discontinuity blocking face from the first sharp edge of the first-discontinuity blocking face, but does not show that the second sharp edge connects the blocking face to a smoothly curving surface downstream of its respective discontinuity

Trumpler shows a centrifugal compressor having a blocking face (unnumbered, attached to C and opposite 34a) forming a second sharp edge on an opposite side of the blocking face from a first sharp edge, the second sharp edge connecting the blocking face to a smoothly curving surface 5a downstream of its respective discontinuity, for the purpose of providing recirculation to prevent surge.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified compressor of Fabri such that the second sharp edge connects the blocking face to a smoothly curving surface downstream of its respective discontinuity, as taught by Trumpler, for the purpose of providing recirculation to prevent surge.

Art Unit: 3745

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Verdier/  
Primary Examiner, Art Unit 3745

Christopher Verdier  
Primary Examiner  
Art Unit 3745